WHAT IS CLAIMED IS:

1. A rotating machine comprising;

a rotating shaft:

a plurality of conductive rotor bars spaced from the rotating shaft and fixed thereto through at least one intermediate member, at least one of the plurality of conductive rotor bars having at least one first internal conduit; and

circulation means for establishing a coolant circulation through the first internal conduit.

2. The rotating machine of claim 1, wherein the rotating shaft having a first wall defining a second internal conduit extending from an inlet end to an outlet end thereof, the rotating shaft further having first and second coolant holes in the wall and communicating with the second internal conduit, wherein the coolant is circulated through the first internal conduit from the second internal conduit by way of the first and second coolant holes.

3. The rotating machine of claim 2, wherein each of the plurality of conductive rotor bars having a first and second end, the at least one first internal conduit extending from the first to second end; the rotating machine further comprising:

a first end plate having a first bore in which the rotating shaft is sealingly fixed in proximity to the first coolant hole, the first end plate further having means for sealingly fixing the first end of each conductive rotor bar having the at least one first

internal conduit thereto, the first end plate further having a third internal conduit for each of the plurality of conductive rotor bars having the at least one first internal conduit for providing communication between the first coolant hole and the first end of the first internal conduit; and

a second end plate having a second bore in which the rotating shaft is sealingly fixed in proximity to the second cooling hole, the second end plate further having means for sealingly fixing the second end of each conductive rotor bar having the at least one first internal conduit thereto, the second end plate further having a fourth internal conduit for each of the plurality of conductive rotor bars having the at least one first internal conduit for providing communication between the second coolant hole and the second end of the first internal conduit;

wherein the circulation of coolant is established through the first, second, third, and fourth internal conduits for each conductive rotor bar having the at least one second internal conduit.

4. The rotating machine of claim 1, wherein each of the plurality of conductive rotor bars have the at least one second internal conduit.

5. The rotating machine of claim 1, wherein the at least one first internal conduit comprises two first internal conduits, each extending from the first to second end of the conductive rotor bars.

6. The rotating machine of claim 3, wherein each of the plurality of conductive rotor bars have the two first internal conduits.

7. The rotating machine of claim 1, wherein the plurality of conductive rotor bars and first and second end plates are fabricated from aluminum and where the means for sealingly fixing the first and second ends of each conductive rotor bar having the at least one first internal conduit comprises a brazed joint at the juncture between each of the first and second ends of each conductive rotor bar having the at least one first internal conduit and their respective end plate.

8. The rotating machine of claim 7, wherein the brazed joint comprises a salts brazed joint.

9. The rotating machine of claim 1, wherein the first internal conduit is cylindrical and located at an area of increased cross-section of each conductive rotor bar having the at least one first internal conduit.

10. The rotating machine of claim 5, wherein each of the two first internal conduits is cylindrical, at least one of which is located at an area of increased cross-section of each conductive rotor bar having the two first internal conduits.

11. The rotating machine of claim 3, wherein the first and second end plates are sealingly fixed to the rotating shaft by means of first and second o-ring

seals disposed on either side of its respective coolant hole.

12. The rotating machine of claim 3, wherein the plurality of conductive rotor bars are located in position relative to the first and second end plates by insertion of their respective first and second ends into corresponding counterbores on the end plates.

13. The rotating machine of claim 3, wherein each of the first and second end plates further has an access groove disposed in a fluid path of the third and fourth internal conduits, respectively, for facilitating the fabrication of the third and fourth internal conduits, and wherein the first and second end plates each further comprise a cover plate sealingly covering its respective access groove.

14. The rotating machine of claim 13, wherein each of the cover plates sealingly cover their respective access grooves by means of a brazed joint at the juncture between each of the cover plates and their respective access groove.

15. The rotating machine of claim 14, wherein the brazed joint comprises a salts brazed joint.

16. The rotating machine of claim 2, further comprising:

a circulation conduit connecting the inlet end of the rotating shaft to the outlet end of the rotating shaft; and

a pump disposed in a fluid path of the circulation conduit for establishing a coolant flow into the inlet end, through the first and second internal conduits for each conductive rotor bar having the at least one first internal conduit, and out the outlet end.

17. The rotating machine of claim 16, further comprising a heat exchanger disposed in the fluid path of the circulation conduit for removing heat from the coolant flowing therein.

18. The rotating machine of claim 3, wherein the circulation means comprises a full restriction plug disposed in the second internal conduit between the first and second coolant holes thereby diverting all of the coolant flow through the first, third, and fourth internal conduits for each conductive rotor bar having the at least one first internal conduit.

19. The rotating machine of claim 3, wherein the circulation means comprises a partial restriction plug disposed in the second internal conduit between the first and second coolant holes thereby diverting a portion of the coolant flow through the first, third, and fourth internal conduits for each conductive rotor bar having the at least one first internal conduit, whereby the remaining portion of the coolant flow continues through the second internal conduit.

20. The rotating machine of claim 1, wherein the at least one intermediate member comprises a plurality of parallel stacked laminates, each laminate

having a central bore for acceptance of the rotating shaft therein and a slot corresponding to each of the plurality of conductive rotor bars for acceptance of each of the plurality of conductive rotor bars therein.

21. The rotating machine of claim 3, wherein each of the first and second end plates further has a groove communicating with the first and second coolant holes, respectively, and each of the third and fourth conduits, respectively, for each conductive rotor bar having the at least one first internal conduit.

22. A method for assembling a rotating machine, the rotating machine comprising a plurality of conductive rotor bars spaced from a rotating shaft, each of the plurality of conductive rotor bars having a first and second end, at least one of the plurality of conductive rotor bars having at least one internal conduit extending from its first to second end; a first end plate having a first bore in which the rotating shaft is sealingly fixed, the first end plate further having means for sealingly fixing the first end of each conductive rotor bar having the at least one internal conduit thereto, the first end plate having fluid flow means for providing fluid flow to the first end of the internal conduit; and a second end plate having a second bore in which the rotating shaft is sealingly fixed, the second end plate further having means for sealingly fixing the second end of each conductive rotor bar having the at least one internal conduit thereto, the second end plate further having fluid flow means providing fluid

flow from the second end of the internal conduit, the method comprising the steps of:

assembling the plurality of conductive rotor bars to the at least one intermediate member and the first end of each conductive rotor bar having the at least one internal conduit to the first end plate;

heating the top region of a molten salts bath such that the top region is maintained at a normal brazing temperature;

only immersing the first end plate and the first ends of the plurality of conductive rotor bars into the top region of the molten salts bath;

salts brazing the first end of each conductive rotor bar having the at least one internal conduit to the first end plate;

either before or after the salts brazing of the first end of each conductive rotor bar having the at least one internal conduit, assembling the second end plate to the second end of each rotor bar having the at least one internal conduit to the second end plate;

only immersing the second end plate and the second ends of the plurality of rotor bars into the top region of the molten salts bath; and

salts brazing the second end of each conductive rotor bar having the at least one internal conduit to the second end plate.

23. The method of claim 12, wherein the fluid flow means of the first and second end plates comprises a third and fourth internal conduit, respectively, wherein the method further comprising the steps of:

providing each of the first and second end plates with an access groove disposed in a fluid path of the third and fourth internal conduits, respectively, for facilitating the fabrication of the third and fourth internal conduits; and

sealingly covering each access groove with a cover plate.

24. The method of claim 23, wherein the immersion steps further include the immersion of a respective cover plate and wherein the salts brazing steps include the brazing of the cover plates to the respective end plates to sealingly cover the access grooves therein.

25. The method of claim 22, further comprising the step of assembling the first and second end plates to the rotating shaft.

26. The method of claim 25, wherein the assembling of the first and second end plates to the rotating shaft comprises the steps of:

heating each of the first and second end plates so as to expand the diameter of the first and second bores therein; and/or

cooling the rotating shaft so as to decrease the diameter thereof; and

normalizing the temperatures of the first and second end plates and/or the rotating shaft such that the first and second end plates are shrink fit to the rotating shaft.